Abstract of the Disclosure

A guide wire having a coil disposed over the guide wire, wherein the coil is integrally formed of a single wire and has regions of differing properties over its length. Some wire embodiments have longitudinally alternating layer segments having differing properties including radiopacity, lubricity, hydrophilicity, hemo-compatibility, flexibility, malleability, stiffness, and shape memory properties. A coil formed according to the present invention may have numerous distinct property segments, while being formed from only a single wire and requiring only two points for affixation to the guide wire. One wire according to the present invention is made by coating a core wire with alternating materials having different properties. Another wire has alternating layer segments including radiopaque material, such as radiopaque loaded polymer, or a radiopaque metal, bonded to the core wire. One embodiment wire includes alternating regions having the lubricity and/or hydrophilicity varied as between the distal and proximal regions. Some embodiments have alternating regions of varying radiopacity, further having a polymeric coating or layer thereover. In yet other embodiments, a tie-layer is disposed between the core wire and the outer polymeric layer, to serve as a polymer substrate to assist in binding the outer layer to the central core wire. Some embodiments use alternating application of ionizing radiation, a binding agent, or a release agent, to vary the adhesion strength of subsequently applied material over alternating regions, so as to enable removing the subsequently applied material selectively in a subsequent removal step.